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cont.
a second waveguide coupled to said first waveguide, said second waveguide having a lateral taper formed therein for guiding light between said first waveguide and said second waveguide;

wherein the first mode of light and the second mode of light are divided unequally between said first waveguide and said second waveguide.

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42. The device according to claim ¹~~41~~ wherein the first mode of light is primarily confined to said first waveguide and the second mode of light is primarily confined to said second waveguide.

3
43. The device of claim ¹~~41~~, wherein said lateral taper has an exponential curve.

4
44. The device of claim ¹~~41~~, wherein said first waveguide and said second waveguide have different effective indices of refraction.

5
45. The device of claim ¹~~41~~, wherein said second waveguide comprises an active region for amplifying light propagating therein.

6
46. The device of claim ²~~42~~, wherein said second waveguide comprises an active region for amplifying light propagating therein and said second mode of light experiences higher gain than the first mode of light.

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47. The device of claim ~~44~~⁴, wherein said second waveguide has a higher effective index of refraction than said first waveguide.

8
48. The device of claim ~~41~~¹, further comprising a substrate.

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49. The device of claim ~~41~~¹, wherein said device comprises a laser.

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50. The device of claim ~~49~~⁹, wherein said laser comprises at least one quantum well.

11
51. The device of claim ~~41~~¹, wherein at least one of said first waveguide and said second waveguide comprises a grating region for reflecting selected frequencies of light.

12
52. The device of claim ~~41~~¹, wherein said second waveguide is positioned vertically relative to said first waveguide.

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53. The device of claim ~~41~~¹, wherein said device comprises at least one of the following: an optical detector and an optical amplifier.

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54. The device of claim ~~41~~¹, wherein said device is a photonic integrated circuit.

FOOTNOTES - 101801

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55. A photonic device, comprising:

at least a first waveguide and a second waveguide, wherein one of said first waveguide and said second waveguide comprise a lateral taper for guiding light between said first waveguide and said second waveguide, and wherein said first waveguide and said second waveguide have different effective indices of refraction.

56. The device according to claim 55, wherein at least a first mode of light and a second mode of light propagate in said device, and wherein the first mode of light is primarily confined to said first waveguide and the second mode of light is primarily confined to said second waveguide.

¹⁷
~~57~~. The device of claim ¹⁵~~55~~, wherein said lateral taper has an exponential curve.

¹⁸
~~58~~. The device of claim ¹⁵~~55~~, wherein said second waveguide comprises an active region for amplifying light propagating therein.

¹⁹
~~59~~. The device of claim ¹⁶~~56~~, wherein said second waveguide comprises an active region for amplifying light propagating therein and the second mode of light experiences higher gain than the first mode of light.

²⁰
~~60~~. The device of claim ¹⁵~~55~~, wherein said second waveguide has a higher effective index of refraction than said first waveguide.

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